查询GS-DC200供应商

SGS-THOMSON MICROELECTRONICS

GS-DC200 Family

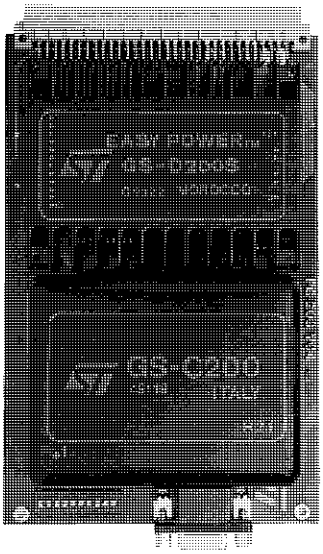
STEPPER MOTOR CONTROL AND DRIVE SYSTEM FAMILY

DESCRIPTION

The **GS-DC200** series is a family of single Eurocard boards that contain all the logic necessary to operate a stepper motor, including the instructions decoding, the step timing generation, the storage of the program to be executed. The motor interface can deliver phase current up to 2.5A.

The boards can be used as a stand alone complete motion control system or they can be driven by a central host computer.

The **GS-DC200** family is built around the **GS-C200**, **GS-C200S**, **GS-D200**, **GS-D200S** modules, (see the relevant data sheet) and it retains all the features of these modules.



SELECTION CHART

Ordering Number	Controller Sequencer Driver	Instruction Set Commands	Phase Current (A)
GS-DC200	GS-C200+GS-D200	25	2.0
GS-DC200S	GS-C200+GS-D200S	25	2.5
GS-DC200SS	GS-C200S+GS-D200S	29	2.5

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	DC Supply Voltage	42	V
T_{stg}	Storage Temperature Range	–40 to +105	°C
Thop	Max Operating Heatsink Temperature (GS-D200/200S)	+85	°C

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C and V_S=24V unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_S	DC Supply Voltage		12		40	V
I_S	Quiescent Supply Current			150		mA
V_i	Logic Input Voltage	Low High	 2		0.8 5	V V
V_o	Logic Output Voltage	Low High	 2		0.8 5	V V
I_{ph}	Programmable Phase Current	GS-DC200 GS-DC200S/SS			2 2.5	A A
f_c	Chopper Frequency			17		kHz
t_{cpw}	Clock Pulse Width				5	µs
t_{rpw}	Reset Pulse Width (Internal)				500	µs

MOTION CHARACTERISTICS

Speed Range	10 to 10000 steps
Speed Resolution	10 steps
Ramp Length	1 to 999 steps
Ramp Resolution	1 step
Positioning Range (GS-DC200/S)	0 to 9999999
Positioning Range (GS-DC200SS)	–8388608 to +8388607
Single Movement Range	1 to 999999 steps
Positioning Resolution	1 step
Positioning Repeatibilty	± 0 step
Program Storage Capability	119 Bytes

COMMUNICATION PORT CHARACTERISTICS

SIGNAL LINES	3(TXD, RXD, GND)
BAUD RATE RANGE	110 to 9600
FORMAT	1 Start Bit
	7 Data Bit
	2 Stop Bit
	Odd Parity

Figure 1. GS-DC200, GS-DC200S and GS-DC200SS Block Diagram

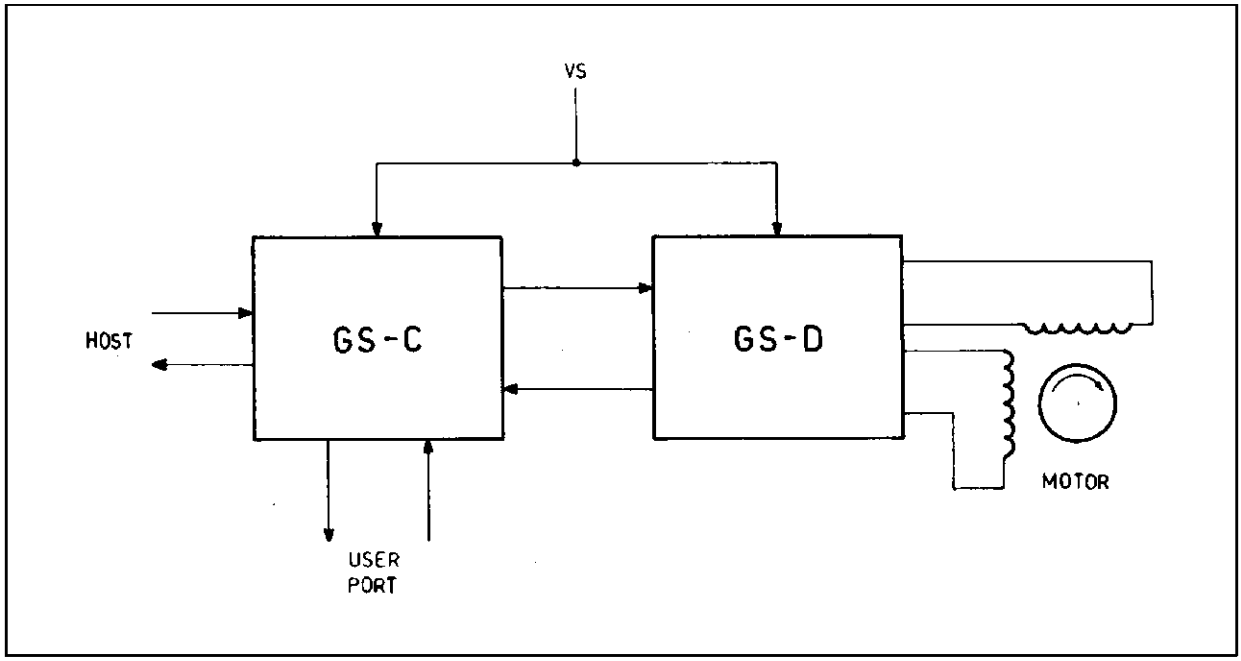
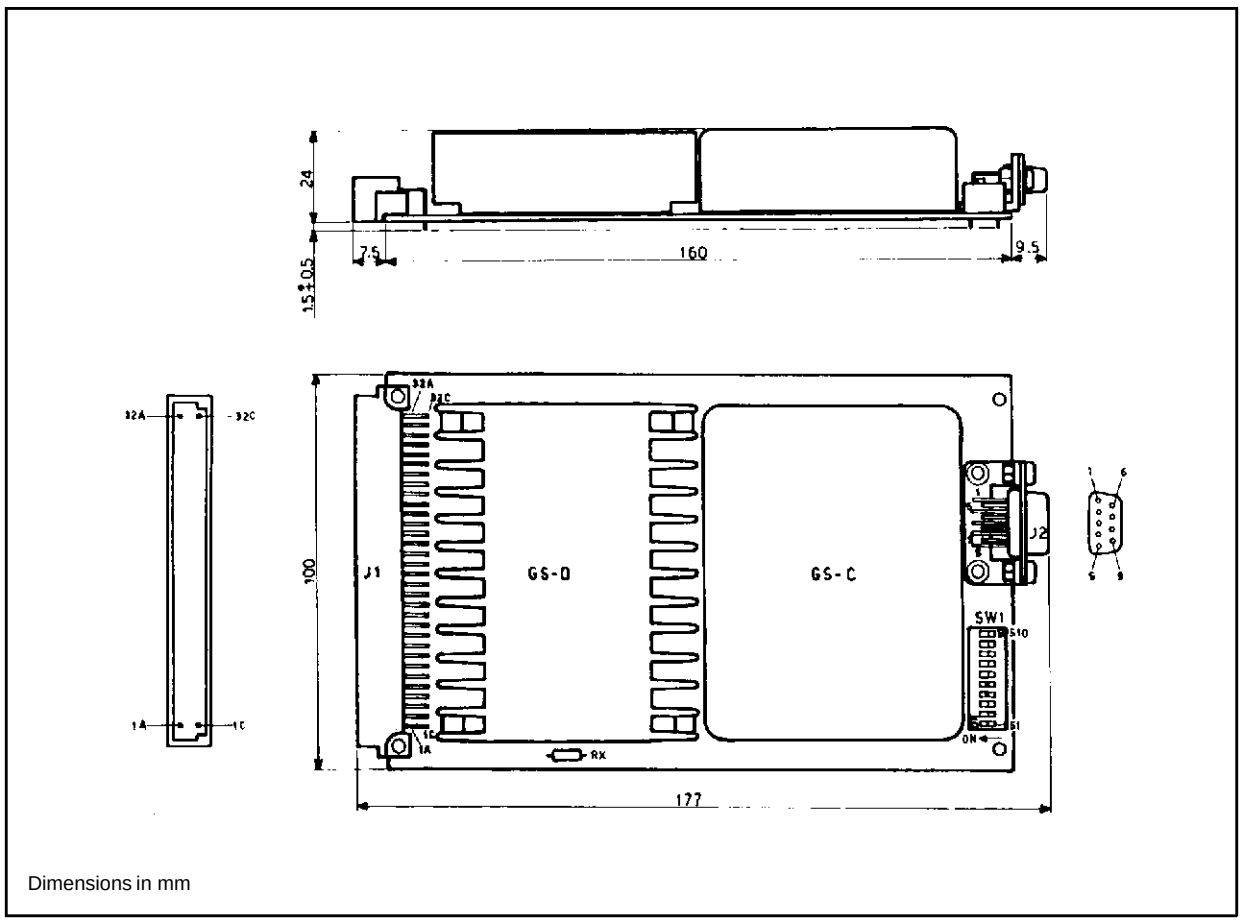
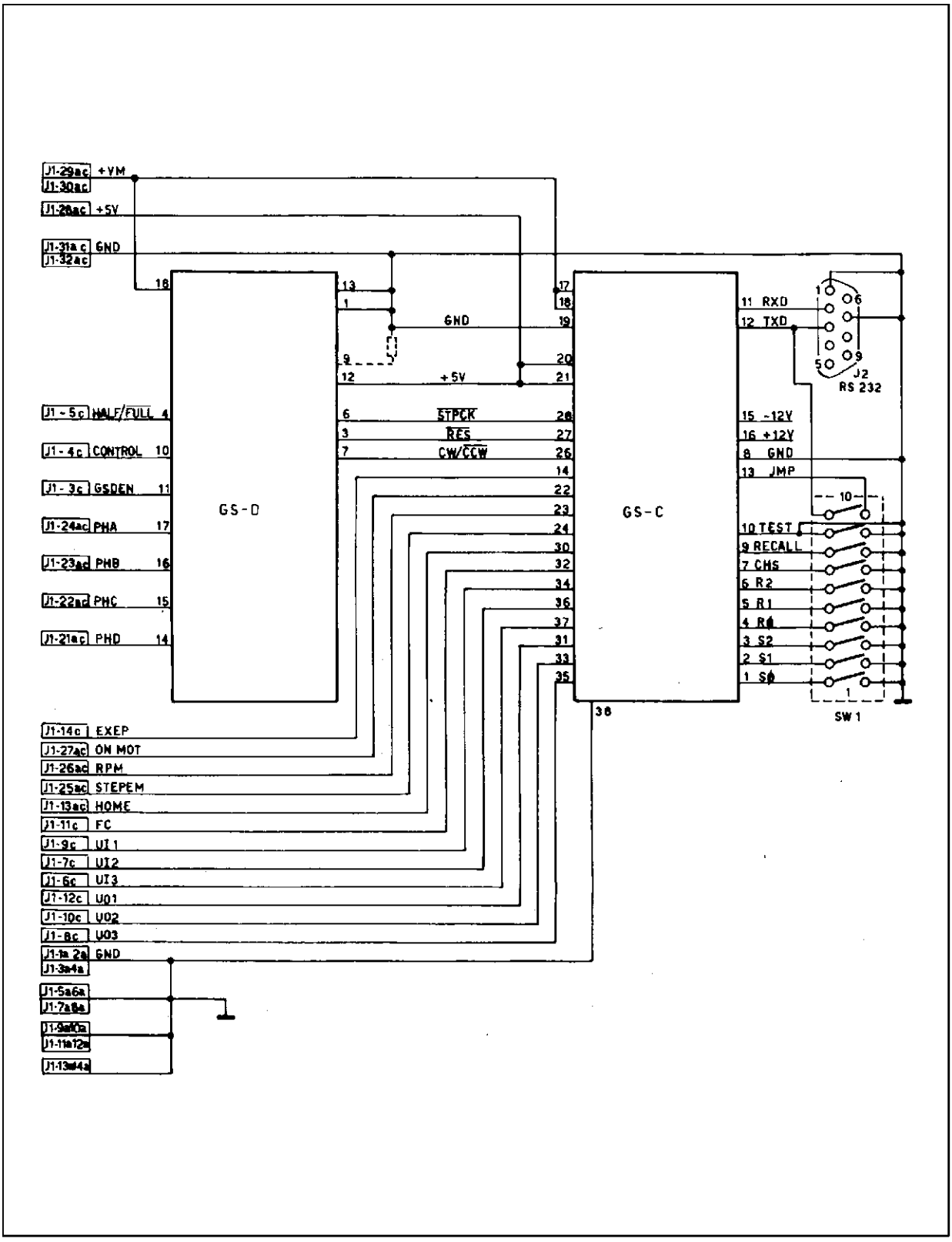


Fig. 2 - GS-DC Stepper Motor Driver/Controller Board



Dimensions in mm

Fig. 3 - GS-DC200, GS-DC200S and GS-DC200SS Schematic Diagram



GS-DC FAMILY BUS CONNECTOR PINS DESCRIPTION

The GS-DC family uses a 32 pin (16+16) DIN 41612-VG 95324 male connector and a RS-232 connector.

DIN BUS CONNECTOR (J1)

Pin	Row a Signal	Row c Signal
1	Ground	Not used
2	Ground	Not used
3	Ground	Power driver enable input
4	Ground	Power driver control input
5	Ground	Half/Full step select
6	Ground	User input 3
7	Ground	User input 2
8	Ground	User output 3
9	Ground	User input 1
10	Ground	User output 2
11	Ground	End-of-travel switch
12	Ground	User output 1
13	Ground	Home switch
14	Ground	Prog. under execution output
15	Not used	Not used
16	Not used	Not used
17	Not used	Not used
18	Not used	Not used
19	Not used	Not used
20	Not used	Not used
21	Phase D output	Phase D output
22	Phase C output	Phase C output
23	Phase B output	Phase B output
24	Phase A output	Phase A output
25	Step enable input	Stop enable input
26	Ramp in execution logic output	Ramp in execution logic output
27	Motor moving	Motor moving
28	+5V output	+5V output
29	Supply voltage	Supply voltage
30	Supply voltage	Supply voltage
31	Supply ground	Supply ground
32	Supply ground	Supply ground

RS-232 CONNECTOR (J2 - DB9)

Pin 1	Ground
Pin 2	Received data input
Pin 3	Transmitted data output
Pin 7	Ground

GS-DC FAMILY HARDWARE AVAILABLE COMMANDS

Dip switch configuration selection (0=OFF 1=ON)

S1	S2	S3	Address	Protocol
0	0	0	–	Point-to-point
1	0	0	1	Multipoint
0	1	0	2	Multipoint
1	1	0	3	Multipoint
0	0	1	4	Multipoint
1	0	1	5	Multipoint
0	1	1	6	Multipoint
1	1	1	7	Multipoint

S4	S5	S6	Baud rate
0	0	0	110
1	0	0	150
0	1	0	300
1	1	0	600
0	0	1	1200
1	0	1	2400
0	1	1	4800
1	1	1	9600

S7	Checksum
1	Disable
0	Enable

S8	Stand alone operation
1	Enable
0	Disable

Note: Switch position 9 is not used.

S10	RS232 TXD pull-down
0	Not connected
1	Connected

Rx	Phase peak current programming

USER NOTES

To correctly operate the GS-DC boards family, it is recommended to read the following data sheets: GS-C200/200S; GS-D200/200S; GS-C200 PROG.

Supply Voltage

The recommended operating maximum supply voltage must include the ripple voltage on the V_S supply rail and it must not exceed 40V to avoid permanent damage to the board.

The boards have internal capacitors connected between the supply and ground pins to assure the electrical stability. These capacitors cannot handle high values of current ripple and they would be permanently damaged if the voltage source impedance is not adequately low.

The use of a low ESR, high current ripple, 470µF/50V capacitor located as close as possible to the board is recommended. Suitable units are the Sprague type 672 D or 678 D, the RIFA type PEC 126 or any equivalent unit.

Board Protections

The GS-DC200 board is protected against occasional or permanent short circuits to the supply voltage of the phase output pins.

The GS-DC200S and GS-DC200SS are protected also against short circuits to ground or to another phase output.

For the GS-DC200S and GS-DC 200SS the protection is of the latching type i.e. when an overload occurs, the board is automatically disabled. To restart the operations, the supply voltage must be switched off for at least 100 ms.

Motor Connection

When long wires are needed to connect a remote motor, it is recommended to use twisted pair cables with a proper cross section to minimize DC losses and RFI problems.

Phase Current Programming

The maximum output current/phase can be programmed by changing the value of the R_X resistor. The factory setting is for maximum current of

1 A GS-DC 200

2 A GS-DC200S / GS-DC200SS.

The new value of R_X resistor for a different value of maximum phase current I (A) can be calculated according to the following formulas:

GS-D200

I > 1,07

$$Rx = \left[\frac{10 - I}{(0.993 * I) - 1}\right] k\Omega \quad Rx \geq 8.2K\Omega$$

I < 1,07

$$Rx = \left[\frac{I}{1 - (0.993 * I)}\right] k\Omega$$

GS-D200S

I > 2,11

$$Rx = \left[\frac{10 - (0.33 * I)}{(0.473 * I) - 1}\right] k\Omega \quad Rx \geq 50K\Omega$$

I < 2,11

$$Rx = \left[\frac{I}{3.03 - (1,43\, I)}\right] k\Omega$$

The maximum programmed current must not exceed 2.0A for the GS-DC200 and 2.5A for the GS-DC200S/GS-DC200SS.

Thermal Characteristics

The maximum power dissipation occurs on the GS-D200/GS-D200S modules used on the boards. The thermal resistance case-to-ambient of the integral heatsink of these modules is 5°C/W. This means a 50°C temperature increase of the heatsink if the internal power dissipation is 10W.
The maximum allowed heatsink temperature is 85°C. Therefore, according to the ambient temperature and/or the internal power dissipation, forced ventilation may be required.

Programming

To correctly program motion sequences, see the GS-C200/200S and/or GS-C200 PROG data sheets.

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